

**Four New Gobiid Fishes of the Genus *Eviota* from the Western Pacific, with Clarification of *Eviota guttata* and *Eviota albolineata* (Teleostei: Gobiidae)**

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Four new species of the Indo-Pacific gobiid fish genus *Eviota* are described: *E. toshiyuki* from the Ryukyu and Ogasawara Islands (previously misidentified as *E. epiphanes*); *E. winterbottomi* from Vietnam, Palau, and Komodo; *E. rubrisparsa* from Christmas Island (Indian Ocean) and New Britain, with underwater photographs from Indonesia, Papua New Guinea, and the Solomon Islands; and *E. shimadai* from the Ogasawara Islands, Palau, and Bali. The first three species fall in Group I of Lachner and Karnella (1980), and the fourth in their Group IV. A comparison is provided of the similar species *Eviota guttata* Lachner and Karnella, which ranges from the Red Sea (type locality) to the Samoa Islands, and *E. albolineata* Jewett and Lachner from the Society Islands, Tuamotu Archipelago, and the Line Islands.

The literature on the tiny fishes of the gobiid genus *Eviota* consists mainly of descriptive papers with little or no information on the life color, and semi-popular guidebooks or articles with color illustrations but generally lacking morphological data. During the second author's many field trips within the Indo-Pacific region, a special effort was made to take underwater photographs of species of *Eviota* and then collect the photographed fish and others like it with the use of the anesthetic quinaldine. We began our research on these specimens with a new species described as *Eviota tigrina* from Tonga (Greenfield and Randall 2008).

We describe four species here, the first, *E. toshiyuki*, known only from the Ryukyu and Ogasawara Islands (formerly misidentified as *E. epiphanes*); the second, *E. winterbottomi*, from a specimen first collected from the island of Komodo in Indonesia by the second author but described here with more material collected by Richard Winterbottom and colleagues from Vietnam; the third species, *E. shimadai*, is represented by specimens from the Ogasawara Islands, Ryukyu Islands, Palau, and Bali; and the fourth species, *E. rubrisparsa*, from four specimens from Christmas Island (Indian Ocean) and one from New Britain. We also report *E. rubrisparsa* from underwater photographs from localities in Indonesia (Alor, Flores, and West Papua), New Guinea (D'Entrecasteaux Islands), and the Solomon Islands. The species has previously been misidentified as the similar *Eviota albolineata* Jewett and Lachner 1983, itself long confused with *E. guttata* Lachner and Karnella 1978. The latter ranges from the Red Sea (type locality) east to the islands of Micronesia and

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the Samoa Islands. *Eviota albolineata* is recorded only from the Society Islands (type locality, Tahiti), Line Islands, and the Tuamotu Archipelago.

## MATERIALS AND METHODS

Counts and measurements, descriptions of fin morphology and the cephalic sensory-canal pore patterns follow Lachner and Karnella (1980). Measurements were made to the nearest 0.1 mm using dial calipers and an ocular micrometer and are presented as percentage of standard length (SL). Cyanine Blue 5R (acid blue 113) stain was used to make pores more obvious (Akihito et al. 1993; Saruwatari et al. 1997; Nakabo 2002). Values for the holotype are given first, followed by the range for all types and by the arithmetic mean, where appropriate, in parentheses. Photographs of preserved specimens are shown in Figure 37 to aid in the recognition of museum specimens. Institutional abbreviations are as listed in Leviton et al. (1985).

## SPECIES DESCRIPTIONS

### *Eviota toshiyuki* Greenfield and Randall, sp. nov.

Figures 1–2, 37A.

*Eviota epiphanes* (non Jenkins). Masuda et al. 1984, 243, pl. 237-D (southern Japan); Randall et al. 1997, 56, pl. 17B (Ogasawara Islands) (Fig. 2 here); Nakabo 2002, 1177, 1282, & 1604 (Ryukyu Islands and Ogasawara Islands to Kochi Prefecture).

**MATERIAL EXAMINED.**—**HOLOTYPE:** OMNH-P 35366, 18.0 mm SL, female, Japan, Ogasawara Islands, Chichi-jima Island, Miyanohama Beach, 27°06'01.23" N, 142°11'51.6" E, 8 m, hand net, T. Suzuki and M. Hosokawa. **PARATYPES:** NSMT-P 94747, 14.1 mm SL, male, taken with holotype; BPBM 35204(2), 11.8–17.8 mm SL, Japan, Ogasawara Archipelago, Chichi-jima, south side, cave, 3–4 m, rotenone, J.E. Randall, J.L. Earle, and H. Ida, 25 July 1991; CAS 227276, 15.3 mm SL, collected with BPBM 35204; USNM 396531, 12.2 mm SL, collected with BPBM 35204.

**DIAGNOSIS.**—The following combination of characters distinguishes *E. toshiyuki* from congeners: dorsal/anal fin-ray formula 9/8; 17 pectoral-fin rays, some branched; cephalic sensory-pore system pattern I (complete); 5th segmented pelvic-fin ray absent; pelvic-fin membranes not well-developed; branches on 4th pelvic-fin ray 5–9; genital papilla non-fimbriate; first two spines of dorsal fin filamentous; body slender 17.9–22.2% SL; pectoral-fin base with two distinctive dark spots; subcutaneous dark spot midlaterally at posterior end of caudal peduncle.

**DESCRIPTION.**—Dorsal-fin rays VI+I-9; anal-fin rays I,8; pectoral-fin rays 17, rays 11–15 branched in holotype; pelvic-fin rays I,4; branches on 4th pelvic-fin ray 9 (5–9), 1 or 2 (1–4) segments between branches; 12 (12–13) branched caudal-fin rays; segmented caudal-fin rays 17 (16–17); lateral scale rows 25 (24–25); transverse scale rows 7; breast scaleless; first dorsal fin of holotype filamentous 31.1 % SL (male paratype = 39.7 % SL); pelvic fins reaching to anus or genital papilla; cephalic sensory-pore system pattern I (complete); male genital papilla non-fimbriate.

*Measurements* (based on holotype and five paratypes): Standard length 11.8–18.0 mm; head length 28.9 (27.4–31.6, 29.7); origin of first dorsal fin 35.3 (34.0–36.2, 35.3); origin of second dorsal fin 57.8 (54.8–57.8, 56.8); origin of anal fin 60.0 (57.4–63.9, 60.4); caudal-peduncle length 21.7 (21.5–24.1, 22.2); caudal-peduncle depth 14.4 (10.7–14.4, 12.7); body depth 22.2 (17.9–22.2, 20.1); eye diameter 8.6 (8.6–10.5, 9.4); snout length 5.3 (5.1–7.2, 6.0); pectoral-fin length 27.8 (27.8–33.2, 34.2); pelvic-fin length 30.0 (27.0–30.6, 29.5).

*Color in preservative of holotype:* Color of head and body pale yellowish. Six internal dark brown spots running from anal-fin origin back to caudal-fin base. A black internal spot at center of

posterior end of caudal peduncle. Head crossed by four brown bands, anteriormost just behind eyes and posteriormost in front of first dorsal fin. Side of head with anteriormost head band crossing nape and extending below eye across cheek, and second band from nape across operculum. A brown spot at posteroventral edge of eye, and another brown area at end of jaws. Pectoral-fin base with two brown spots, dorsal and ventral, separated by a light area. Caudal fin crossed by a narrow dark brown band at its base, membranes immaculate, entire fin edged in brown. Pectoral-fin membranes immaculate, rays with scattered melanophores. Pelvic fins immaculate. First dorsal fin with three rows of scattered melanophores crossing fin on lower two thirds, distal one third clear with brown margin. Second dorsal fin with scattered melanophores on lower half, distal half clear with a brown margin. Anal fin with clear rays and brown membranes.

*Color of fresh holotype* (Fig. 1): Body semi-translucent with yellowish tinge, dark internal blotches along vertebral column and along ventral half of caudal peduncle. Body with a lengthwise row of six black blotches along side on and above midline and a row of eight below midline. Posteriormost spots of two rows joined towards end of caudal peduncle to form a bar. Another narrower brownish-black bar at end of hypural plate. Scale pockets on sides with dark brown pigment, forming spindles. Four black bars across top of head and nape between eyes and first dorsal fin. Pectoral-fin base with two brown blotches separated by a silver-white bar. Side of head with two major dark brown bars, one at operculum and second on cheek, both connecting dorsally to bars on top of the head. A small black spot posterodorsally to eye, a second running from ventral portion of eye to upper jaw, and a third at posterior end of jaws. Area between these dark markings silver-white with a bluish tinge, being most intense from eye down across the two jaws. Jaws and snout light brown with some silver-white areas. Pupil of eye black, iris red-orange. Pectoral fins immaculate. Pelvic fins white with brown on segments. Posterior margin of caudal fin blackish, membranes clear, and a scattering of melanophores on basal two thirds. Anal fin dusky with margin of black, red-orange line extending down from body bars onto bases of second and sixth fin rays. First dorsal fin with three evenly spaced dark spots extending up from body onto fin a short distance; filamentous first spine with eight evenly spaced red-orange spots; two rows of larger red-orange spots crossing center of fin within a band of scattered melanophores; distal third of fin with clear rays and membranes; margin of fin edged in black. Second dorsal fin with five evenly spaced spots extending up from body onto bases of fin rays; four rows of red-orange spots crossing fin; a scattering of melanophores on basal one-third and distal third, leaving the middle third lighter; distal margin of fin edged in black.

**ETYMOLOGY.**— The specific epithet is a patronym, a noun in the Latin genitive case, in honor of Toshiyuki Suzuki who collected the holotype and a paratype and has been most helpful in providing photographs and specimens of *Eviota* species. We have used the name *toshiyuki* instead of *suzuki* because many in Japan have the surname Suzuki.

**COMPARISONS.**— *Eviota toshiuyuki* has a complete cephalic sensory-canal pore configuration, belonging to Group I of Lachner and Karnella (1980). This group contained 22 described species (Shibukawa and Suzuki 2005, Matsuura and Senou 2006, Allen, Steene, and Orchard 2007, Greenfield 2009). With the addition of *E. toshiuyuki*, the total is now 23. *Eviota toshiuyuki* has a dorsal/anal formula of 9/8, whereas the following species in Group I have different formulas: 8/7 – *E. pardalota* Lachner and Karnella 1978; 8/8 – *E. distigma* Jordan and Seale 1906, *E. herrei* Jordan and Seale 1906, *E. monostigma* Fourmanoir 1971, *E. nebulosa* Smith 1958, *E. nigripinna* Lachner and Karnella 1980, *E. pseudostigma* Lachner and Karnella 1980, and *E. randalli* Greenfield 2009; 10/8–10/9 – *E. abax* (Jordan and Snyder 1901), *E. natalis* Allen 2007 (also 9/8), and *E. masudai* Matsuura and Senou 2006. Of those Group I species with a formula of 9/8, *E. melasma* Lachner and Karnella 1980 and *E. smaragdus* Jordan and Seale 1906 both have a single, promi-

ment dark occipital spot that is lacking in *E. toshiyuki*. *Eviota rubrisparsa* Greenfield and Randall 2010 lacks the two dark spots on the pectoral-fin base that is present in *E. toshiyuki*, as do *E. albo-lineata*, *E. guttata*, *E. inutilis*, and *E. natalis*. *Eviota toshiyuki* has a filamentous first dorsal fin, whereas the spines of the fin are not filamentous in the following species: *E. disrupta* Karnella and Lachner 1981, *E. epiphanes* Jenkins 1903, *E. fasciola* Karnella and Lachner 1981, *E. irrada* Karnella and Lachner 1981 and *E. readerae* Gill and Jewett 2004. *Eviota korechika* Shibukawa and Suzuki 2005, also from Japan, lacks the basal caudal spot of *E. toshiyuki*, and the pelvic membrane extends farther posteriorly. *Eviota korechika* has 5–7 diagonal blue bars on the second dorsal and anal fins that are lacking in *E. toshiyuki*.

This species in Japan has been referred to previously as *E. epiphanes*. The most obvious differences between *E. toshiyuki* and *E. epiphanes* are the filamentous first dorsal-fin spines and two dark spots on the pectoral-fin base, both characters absent in *E. epiphanes* (Fig. 3). *Eviota epiphanes* is known only from the Hawaiian Islands, Johnston Island, and the Line Islands.

**REMARKS.**—*Eviota toshiyuki* is very similar in coloration to *E. zonura* (Fig. 4). Although *E. zonura* has been recorded from Japan in the past, Nakabo (2002:1604) considers those records to be of *E. epiphanes* (= *E. toshiyuki* - see above). The great similarity in color, and the fact that the species differ only in the absence of a head pore, suggest that they might be sister species. *Eviota toshiyuki* is known only from Japan, whereas *E. zonura* is known south to Australia and east to the Mariana Islands and Samoa.

***Eviota winterbottomi* Greenfield and Randall, sp. nov.**

Figures 5–6, 37B.

**MATERIAL EXAMINED.**—**HOLOTYPE:** ROM 73100, 14.7 mm SL, male, Vietnam, Nha Trang Bay, Hon Rua (Rua Island), south side, eastern margin of island, 12.287°N, 109.245°E, 0–6 m, rotenone, field number RW02-07, R. Winterbottom et al., 15 May 2002. **PARATYPES:** ROM 84607, 15.0 mm SL, female, taken with holotype; ROM 74566, 13.1 mm SL female, 14.8 mm SL, male, Vietnam, Nha Trang Bay, Hon Mun (Mun Island), northeast tip, 12.169°N, 109.312°E, 9–12 m, rotenone, field number RW02-16, R. Winterbottom et al., 22 May 2002; ROM 74565, 10.8 mm SL, immature, Vietnam, Nha Trang Bay, Hon Mun (Mun Island), north side at mid-point of island, 12.172°N, 109.300°E, 0–3 m, rotenone, field number RW02-15, R. Winterbottom et al., 21 May 2002; ROM 74567, 15.6 mm SL, male, Vietnam, Nha Trang Bay, Hon Mun (Mun Island), east side, 12.171°N, 109.312°E, 0–7 m, rotenone, field number RW02-25, R. Winterbottom et al., 21 May 2002; CAS 227274, 14.8 mm SL, male, 16.4 mm SL, female, taken with ROM 74567; BPBM 40982, 15.5 mm SL, male, taken with ROM 74567; USNM 396529, 16.2 mm SL, male, Vietnam, Nha Trang Bay, Hon Mun (Mun Island), northeast side, 12.191°N, 109.342°E, 12–30 m, rotenone, field number RW02-24, R. Winterbottom et al., 26 May 2002; USNM 396530, 15.8 mm SL, female, Vietnam, Nha Trang Bay, Hon Mun (Mun Island), southeast side near rocky islets, 12.176°N, 109.279°E, 0–5 m, rotenone, field number RW02-26, R. Winterbottom et al., 27 May 2002. **NON TYPES:** ROM 84608 (3), 10.1–10.3, taken with ROM 74567; ROM 80693, 12.9 mm SL, female, Palau, north tip of barrier reef off Babeldaob Island, 7.999°N, 109.245°E, 14–18.4 m, rotenone, field number RW06-20, W. Holleman, M. Winterbottom, M. Westneat, J. Cooper, & A. Rice, 29 March 2006; BPBM 38789(2), 15.1–15.6 mm SL, Komodo, Indonesia, 30.5m, quinaldine, J.E. Randall, 9 September, 2000.

**DIAGNOSIS.**—The following combination of characters distinguishes *E. winterbottomi* from congeners: dorsal/anal fin-ray formula 8/8; 6–7 branched pectoral-fin rays; cephalic sensory-pore system pattern I (complete); 5th segmented pelvic-fin ray absent; branches on 4th pelvic-fin ray 3–6; genital papilla non-fimbriate; first dorsal fin not filamentous; body slender 18.8–23.6% SL; body with spindle-shaped black lines (from black pigment in scale-pocket tissue); anal fin pigmented; three dark marks on ventral surface of caudal peduncle and two more on anal-fin base in preserved specimens; six internal black blotches on sides when alive.



**DESCRIPTION.**— Dorsal-fin rays VI+I,8; anal-fin rays I,8; pectoral-fin rays 15 (15–17), with rays 10–15 branched (8–14); pelvic-fin rays I,4, 5th ray absent; 5 branches on 4th segmented pelvic-fin ray (3–6), 3–4 segments between consecutive branches (3–4); pelvic-fin membrane reduced; branched caudal-fin rays 12 (12–14); segmented caudal-fin rays 17; lateral scale rows 24 (23–24); transverse scale rows 7; breast scaleless; first dorsal fin of male not filamentous (see discussion); pelvic fins reaching to genital papilla; male genital papilla non-fimbriate; cephalic sensory-pore system pattern I (complete).

**Measurements** (based on holotype and 10 paratypes): Standard length 10.8–16.4; head length 31.9 (28.3–31.9; 30.3); origin of first dorsal fin 36.6 (32.8–38.4; 35.7); origin of second dorsal fin 57.6 (53.1–60.8; 56.8); origin of anal fin 58.3 (55.4–63.1; 59.4); caudal-peduncle length 25.1 (20.5–28.2; 23.9); caudal-peduncle depth 14.9 (12.0–16.2; 13.9); body depth 21 (18.8–23.6; 21.4); eye diameter 9.8 (8.5–10.6; 9.6); snout length 6.1 (4.6–6.1; 5.5); pectoral-fin length 33.9 (30.0–39.4; 34.5); pelvic-fin length 28.5 (24.0–38.0; 29.9).

**Coloration in preservative:** Background color of head and body pale yellowish. Body with vertical dark brown lines (from pigment in scale-pocket tissue) forming spindle or chevron-shaped patterns on back and sides. Three brown bars across nape directly in front of dorsal fin. Two rounded brown blotches behind eye above cheek and operculum. Three blotches below eye and two more on cheek. A peppering of dark brown spots above and behind eyes and on snout, upper and lower jaws light brown. A peppering of small brown spots on upper half of pectoral-fin base. Base of anal fin with two brown spots, one at front and other at back of fin. Three more similar spots along ventral surface of caudal peduncle. Narrow longitudinal dark line on midline of caudal peduncle before caudal-fin base. Internal dark area on caudal peduncle before caudal-fin base (remainder of internal blotch), more intense above midline. Area posterior to caudal-peduncle blotch lighter. Caudal, second dorsal, and anal fins with brown pigment on membranes. Basal two-thirds of first dorsal fin dark brown, a narrow white band above, and then distal one-third black. Pectoral fin peppered with small brown spots. Pelvic fins clear. Pupil of eye clear, iris black.

**Color of fresh holotype** (Fig. 5): Head and body translucent with internal coloration visible. Six large internal black blotches running down midline of body, posterior one most visible. Spindle or chevron-shaped reddish-brown lines (from pigment in scale-pocket tissue) on sides and back, but not on nape. Reddish-brown spots on head, nape and pectoral-fin base as described for preserved specimen. Pupil of eye black, iris gold with orange. Caudal fin with reddish-brown pigment on rays and membranes. Base of second dorsal fin with reddish-brown spots on spine and rays, smaller spots on membranes.

Two specimens from Komodo, Indonesia (BPBM 38789) agree with the type series of *E. winterbottomi* in counts, measurements, pore pattern, and basic coloration, but the first dorsal fin is filamentous (Fig. 6) whereas it is not in the types from Vietnam or the specimen from Palau. The coloration on the top of the head and snout also is more golden, and the spots on the side of the head more orange. Because of these differences we have included neither the Komodo nor the Palau specimens in the type series because we wished to restrict the types to a specific locality.

**ETYMOLOGY.**— The specific epithet is a patronym, a noun in the Latin genitive case, in honor of Richard Winterbottom, who first recognized this new species from specimens he collected in Vietnam, maintains an updated working key to the species in the genus *Eviota*, and provides valuable advice on goby systematics.

**COMPARISONS.**— Like *E. toshiyuki*, *E. winterbottomi* has a complete cephalic sensory-pore system (Group I of Lachner and Karnella 1980) bringing the number of species in this group to 24. Only seven of these species share the dorsal/anal fin-ray formula of 8/8 with *E. winterbottomi*: *E. distigma* Jordan and Seale 1906; *E. herrei* Jordan and Seale 1906; *E. monostigma* Fourmanoir

1971; *E. nebulosa* Smith 1958; *E. nigripinna* Lachner and Karnella 1980; *E. pseudostigma* Lachner and Karnella 1980, and *E. randalli* Greenfield 2009. The remainder of the species have a formula of 10/9, 10/8, 9/8 (most), or 8/7. Four of the species with an 8/8 formula have distinctive dark markings on the pectoral-fin base that are lacking in *E. winterbottomi*: *E. distigma*, *E. monostigma*, *E. pseudostigma*, and *E. randalli*. *Eviota nigripinna* has a uniformly dark dorsal fin that is lacking in *E. winterbottomi*. *Eviota winterbottomi* is most similar to *E. nebulosa*, but the pectoral-fin base is pale (yellowish in life), whereas it is pigmented in *E. winterbottomi*, the posterior internal blotch in fresh specimens is above the midline in *E. nebulosa*, whereas it extends both above and below the midline in *E. winterbottomi*, and *E. winterbottomi* lacks pigment posterior to the caudal-peduncle blotch that is present in *E. nebulosa*. The remaining species, *E. herrei*, is deep bodied (24.8–28.5% SL at dorsal-fin origin), whereas *E. winterbottomi* is more slender bodied with a depth of 18.8–23.6% SL.

***Eviota shimadai* Greenfield and Randall, sp. nov.**

Figures 7–10, 37C.

*Eviota* sp. Shimada and Yoshino (1993:4–5, Figs. 11–19).

*Eviota* sp. 1. Masuda and Kobayashi (1994:339, Fig. 7).

*Eviota* sp. 4 (Hanaguro-isohaze). Nakabo (2002: 1181, unnumbered Fig.).

*Eviota* sp. 4. Senou et al. (2004:132, 2 unnumbered Figs.).

**MATERIAL EXAMINED.**—HOLOTYPE: NSMT-P 94898, 14.5 mm SL, male, Japan, Ryukyu Islands, Hatoma Channel, Iriomote Island, 7 m, hand net, field number S17080, T. Suzuki, M. Suzuki & A. Kawai, 8 July 2008.

PARATYPES: OMNH-P34244, 12.3 mm SL, female, taken with holotype; BPBM 35322, 15.1 mm SL, female, Ogasawara Islands, Chichi-jima harbor, 13 m, quinaldine, J.E. Randall, 7 June 1992; BPBM 38653, 10.6 mm SL, male, Indonesia, Bali, northeast coast at Tulamben, 12 m, quinaldine, J.E. Randall, 15 October 1999; CAS 227275, 12.2 mm SL, male, taken with BPBM 38653; BPBM 35173, 12.8 mm SL, male, Ogasawara Islands, Chichi-jima, Futami Bay, 5 m, rotenone, J.E. Randall & J.L. Earle, 23 July 1991; BPBM 35112, 15.6 mm SL, male, Ogasawara Islands, Chichi-jima, Miyanohama Bay, 24–29 m, J.L. Earle, 20 July 1991; ROM 84584(3), 11.3–12.7 mm SL, males, Palau, Hatohobei State, Helen Reef, 25.747°N, 131.4804°E, 0–4 m, rotenone, M. Westneat, 18 September 2008; ROM 84564(6), 8.8–13.7 mm SL, males and females, Palau, Hatohobei State, Helen Reef, 24.342°N, 131.4554°E, 4–8 m, rotenone, M. Westneat, 17 September 2008; ROM 84590, 10.5 mm SL, male, Palau, Hatohobei State, Helen Reef, 25.218°N, 131.4421°E, 9–17 m, rotenone, M. Westneat, 19 September 2008; ROM 84598, 9.6 mm SL, female, Palau, Hatohobei State, Helen Reef, 25.217°N, 131.4523°N, 8–20 m, rotenone, M. Westneat, 20 September 2008. NON-TYPE: BPBM 35114 (1), Ogasawara Islands.

**DIAGNOSIS.**— The following combination of characters distinguishes *E. shimadai* from congeners: dorsal/anal fin-ray formula usually 8/8, but also 8/7 or 9/8; 16–17 pectoral-fin rays (usually 16), all unbranched; cephalic sensory-pore system pattern IV (lacking pores PITO and IT, and AITO enlarged, engulfing the PITO); 5th segmented pelvic-fin ray variable, absent to 18% of 4th ray; genital papilla non-fimbriate; first dorsal fin filamentous (2<sup>nd</sup> spine 67.2% SL in holotype); branches on 4th pelvic-fin ray 2–3, 2–3 segments between branches; no obvious large dark marks on body; scattered internal melanophores on side of body under pectoral fin and on side of head; in life a silver bar across central portion of pectoral-fin base.

**DESCRIPTION.**— Dorsal-fin elements VI+I, 9 (8–9); anal-fin elements I, 8 (7–8); pectoral-fin rays 17 (16–17), all unbranched; 5th pelvic-fin ray 18% of 4th ray (or absent); branches on 4th pelvic-fin ray 3 (2–3), 3 (2–3) segments between consecutive branches of 4th segmented pelvic-fin ray; branched caudal-fin rays 11; segmented caudal-fin rays 17; lateral scale rows 24 (23–24);

transverse scale rows 7; breast scaleless; first dorsal fins of both males and females filamentous; pelvic fins reaching past anal-fin origin; cephalic sensory-pore system pattern IV; male genital papilla non-fimbriate, pointed with an expanded tip.

*Measurements* (based on holotype and six paratypes): Standard length 10.6–15.6; head length 33.1 (29.4–33.1, 31.1); origin of first dorsal fin 34.5 (31.1–38.5, 34.6); origin of second dorsal fin 56.6 (55.0–61.1, 57.3); origin of anal fin 56.6 (55.3–60.7, 58.0); caudal-peduncle length 22.8 (20.2–27.1, 23.3); caudal-peduncle depth 13.1 (11.6–15.2, 13.5); body depth 21.7 (19.3–24.4, 21.8); eye diameter 10.3 (9.0–11.3, 10.2); snout length 4.8 (4.0–6.4, 5.1); pectoral-fin length 27.9 (26.2–35.8, 30.0); pelvic-fin length 33.8 (28.2–37.2, 33.5).

*Color in preservative* (male): Color of body, head and fins white (pale yellowish when preserved longer) with no bold markings. Scattered melanophores on side of head and jaws, more concentrated on upper jaw, under eye, and nostrils. Dark area behind and above eye. Band of scattered melanophores internally on side, covered by pectoral fin, running from pectoral-fin axil to above anus. Black line along ventral surface of caudal peduncle from anal to caudal fin. Female – Same as male except that scattered melanophores present only above and behind eyes, snout and nostrils. Internal melanophores visible behind eyes.

Some specimens from Palau have scattered melanophores extending downward anteroventrally across the pectoral-fin base. Small black spots along the dorsal midline corresponding to red spots in same position on fresh specimens.

*Color of fresh specimens* (male [holotype, Japan, Fig. 7]): Body translucent, vertebral column silver-blue, with black internal pigment below, most intense on dorsal surface of gut. Head red-orange overlaid with numerous small dark spots, very intense around eye, on upper jaw, nostrils and centrally on operculum. Pupil and iris of eye black, with some areas of red-orange on iris. Pectoral-fin base red-orange with a silver-blue bar crossing at center. A red-orange line extending from upper pectoral-fin base to caudal fin just under the vertebral column and nine short red-orange bars extend dorsally and ventrally. Series of small red-orange spots along dorsal surface from nape, along dorsal-fin bases and onto caudal fin. Caudal fin clear with small red-orange spots on rays, and scattering of melanophores on ventral half and distal margin of membrane. Anal and pelvic fins with yellowish rays and scattered melanophores. First dorsal fin with small red-orange spots on first four elongate spines, the remainder of spines yellow; entire fin covered with scattered melanophores. Second dorsal fin with two rows of small red-orange spots crossing first seven elements and four rows on remaining elements, entire fin covered with scattered melanophores. Pectoral fins immaculate.

Male (paratype ROM 84590, Palau, Fig. 8): Color as above except that dark pigment on head not as intense, dark red stripe behind eye more obvious, and red-orange pigment not as red.

Female (paratype OMNH-P34244, Fig. 9): Color of body and fins as in the male. Head lacks intense small black spots around eye and on side of head. Nostrils are red-orange instead of black, jaws yellow without black pigment and area under eye and posterior to pelvic-fin origin white. Small patch of internal melanophores on cheek behind eye.

*Color in life of female* (paratype BPBM 35322, Fig. 10): Head and body translucent with internal coloration visible. A lateral reddish purple band running from the snout, nostrils, and head and along ventral half of body, narrowing towards posterior half, with six lines extending down from midline to ventral surface. Series of similar colored spots running along back from head, along fin bases, and onto caudal peduncle. The most distinctive coloration is a silver-blue rectangular bar across central portion of pectoral-fin base (no traces of the bar are visible in preserved material). In addition, there is a series of silver-blue spots to bars along body. One row is along the vertebral column interspersed with purple dashes. Another row of lines of silver-blue bars or spots runs from

behind eye along midline to above anus. Narrow silver-blue line runs from between eyes back to nape. Eye has a black pupil, a silver-gold iris, and three reddish purple stripes through eye, one dorsally, one at pupil, and the third ventrally. Ventral half of the head and breast are clear.

**ETYMOLOGY.**— The specific epithet is a patronym, a noun in the Latin genitive case, in honor of Kazuhiko Shimada, who previously recognized this species in Japan as being undescribed.

**COMPARISONS.**— *Eviota shimadai* fits the description of the Group IV species-group of Lachner and Karnella (1980), except that the fifth pelvic-fin ray is absent or up to 18% instead of being more than one-half the length of the fourth ray, and specific color markings on the posterior trunk and fins present in other species in that group are lacking in preservative. There are only five other species in that group: *E. bifasciata* Lachner and Karnella 1980, *E. lachdeberei* Giltay 1933, *E. nigriventris* Giltay 1933, *E. partimacula* Randall 2008, and *E. raja* Allen 2001. *Eviota nigriventris* has a distinctive dark stripe along the ventral side of the body, *E. bifasciata* and *E. raja* have two dark stripes, one along the ventral surface and the other along the dorsal surface of the sides, and *E. lachdeberei* and *E. partimacula* have a dark mark at the caudal-fin base. All of these markings are absent in *E. shimadai*. Because of the lack of both the PITO and IT pores this species fits into Group IV, but the species looks very similar to *E. sigillata* Jewett and Lachner 1983 when alive. It is only the absence of the PITO pore that moves it to Group IV instead of being in Group III. Preserved specimens of *E. sigillata* and *E. shimadai* both have internal scattered melanophores on the side, covered by the pectoral fin, running from the pectoral-fin axil to above the anus. Because of this similarity, it is appropriate to compare other characters between *E. shimadai* and *E. sigillata*. *Eviota shimadai* has a modal dorsal-fin count of VI+I, 8, whereas *E. sigillata* has a modal count of I,9 (Jewett and Lachner 1983 reported that only 7 of 31 specimens had a count of 1,8). In life *E. sigillata* has silver spots under the eye that usually are lacking in *E. shimadai*.

**REMARKS.**— We recognized that the specimens from Indonesia were undescribed. Later, comparing the underwater photographs from Indonesia with those in Senou et al. (2004), we noticed the great similarity to their *Eviota* sp. D (page 132). Noting that they recorded that species from the Ogasawara Islands, we reexamined a specimen from those islands previously identified as *E. sigillata* (BPBM 35322) by Randall et al. (1997) and found that it was the same species as the Indonesian specimens (Fig. 10). Kazuhiko Shimada first recognized this species as new, publishing photographs of it (Shimada and Yoshino 1993:5) and commented on its similarity to *E. sigillata*. *Eviota* sp. D of Senou et al. (2004) is also reported as *Eviota* sp. 4 (“Hanaguro-isohaze”) in Nakabo (2002:1181). After reviewing an earlier version of this paper, R. Winterbottom realized that *Eviota* specimens he collected in Palau, and called species 5, appeared to be *E. shimadai* and kindly forwarded the specimens to us. These specimens now are included with the paratypes (Fig. 8).

***Eviota rubrisparsa* Greenfield and Randall, sp. nov.**

Figures 11–16, 37D.

**MATERIAL EXAMINED.**— HOLOTYPE: WAM P. 29017.003, 19.5 mm SL, male, Australia, Christmas Island, 0.5 km south of Smith Point, sand and dead coral, 10°26'S, 105°40'E, 20–28 m, rotenone, field number CIF-86-0, G.R. Allen and Campbell, 7 June 1986.

PARATYPES: BPBM 39055, 12.3 mm SL, male, Papua New Guinea, New Britain, Lolobau Island, isolated rock on sand, 21 m, quinaldine, J.E. Randall, 3 August 2002; WAM P. 29017-004, 15.6 mm SL, female, 18.3 mm SL male, taken with holotype; CAS 228615, 17.0 mm SL, male, taken with holotype.

**DIAGNOSIS.**— The following combination of characters distinguishes *E. rubrisparsa* from congeners: dorsal/anal fin-ray formula 9/8; 16–19 pectoral-fin rays (mean 18), 5–6 lower rays branched; cephalic sensory-pore system pattern I (complete); 5th segmented pelvic-fin ray 11.5–22% of 4th; branches on fourth pelvic-fin ray 5–7, 3 segments between branches; genital



papilla non-fimbriate; dorsal fin filamentous (to 36.9% SL); no obvious large dark marks on body; anal fin and lower half of caudal fin dark; scattered melanophores behind eyes on nape; body covered with small red dots in life, which disappear in ETOH.

**DESCRIPTION.**—Dorsal-fin rays VI+I,9; anal-fin rays I,8; pectoral-fin rays 19 (16–19, 18), rays 14–18 branched (11 through 18); pelvic-fin rays I,5, 5th ray 13.3 % of 4th (11.5–22%); 7 branches on 4th ray (5–7), 3 segments between branches; branched caudal-fin rays 13 (10–13); segmented caudal-fin rays 17 (16–17); lateral scale rows 25; transverse scale rows 7; breast-scaleless; first dorsal fin of holotype filamentous (36.9% SL, reaching to 7th ray of second dorsal fin); pelvic fins reaching past genital papilla; cephalic sensory-pore system pattern I (complete); male genital papilla non-fimbriate.

**Measurements:** Standard length 12.3–19.5 mm; head length 29.0 (23.8–29.8, 28.3); origin of first dorsal fin 33.6 (33.6–36.1, 35.1); origin of second dorsal fin 53.3 (51.9–54.7, 53.9); origin of anal fin 60.0 (59.6–63.6, 61.0); caudal-peduncle length 26.1 (22.6–27.5, 25.9); caudal-peduncle depth 11.0 (11.0–12.9, 12.0); body depth 17.9 (17.7–21.1, 18.6); eye diameter 8.7 (8.7–10.2, 10.1); snout length 4.6 (4.4–4.6, 4.5); pectoral-fin length 34.4 (28.2–34.4, 31.0); pelvic-fin length 34.6 (25.4–35.9, 31.6).

**Color in preservative:** Background color of body, head, and fins pale yellowish with no bold markings. Scattered melanophores behind eye and on nape, snout, jaws, and sometimes under chin, with a line of melanophores extending posteriorly from eye over preopercle and opercle. Anal and lower half of caudal fin dusky. Scattered melanophores on upper half of caudal, distal portion of first and second dorsal, pectoral, and pelvic fins. Iris of eye black, pupil clear.

**Color in life:** Head and body translucent, with internal silver lines along vertebral column and silver in abdomen visible. Body and caudal fin covered with a sprinkling of small red dots, with eight larger red-dashed lines along midline, the anteriormost behind the eye. A second red line on head behind eye, just above red line at midline. Upper and lower jaws red, snout silver. A red area extending from lower portion of posterior of eye across preoperculum and operculum. Pectoral fin base with a silver bar across its center, with red above and below. Iris of eye gold with distinct black markings on dorsal surface, pupil black, surrounded by a bright gold ring on the iris.

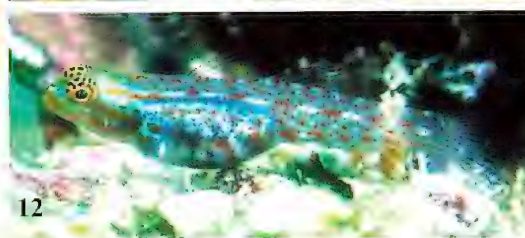
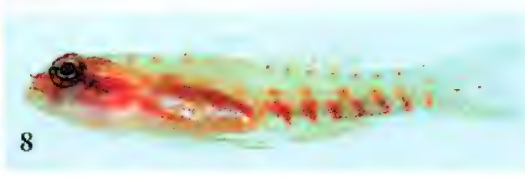
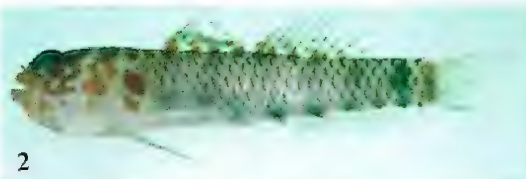
Although the second author was only able to photograph and collect a single individual of *E. rubrisparsa* (Fig. 11), he has taken photographs of this species at four other locations: Alor, Indonesia (Fig. 12); Kimbe Bay, New Britain, Papua New Guinea (Fig. 13); Maumere at Flores, Indonesia (Fig. 14); and D'Entrecasteaux Islands, Papua New Guinea (Fig. 15). G.R. Allen provided additional specimens of *E. rubrisparsa* from Christmas Island (Indian Ocean) and a photograph from West Papua (Fig. 16). He also has photographed *E. rubrisparsa* at the Solomon Islands.

**ETYMOLOGY.**—The specific epithet is an adjective combining the Latin *rubrum* (red) and *sparsus* (sprinkled), referring to the main live color pattern of red dots.

**COMPARISONS.**—*Eviota rubrisparsa* has a complete cephalic sensory-canal pore configuration, belonging to Group I of Lachner and Karnella (1980). With the addition of *E. rubrisparsa*, the total in this group is now 25. *Eviota rubrisparsa* has a dorsal/anal formula of 9/8, whereas the following species in Group I have different formulas: 8/7 – *E. pardalota* Lachner and Karnella 1978; 8/8 – *E. distigma* Jordan and Seale 1906, *E. herrei* Jordan and Seale 1906, *E. monostigma* Fourmanoir 1971, *E. nebulosa* Smith 1958, *E. nigripinna* Lachner and Karnella 1980, *E. pseudostigma* Lachner and Karnella 1980, and *E. randalli* Greenfield 2009; 10/8–10/9 – *E. abax* (Jordan and Snyder 1901), *E. natalis* Allen 2007 (also 9/8), and *E. masudai* Matsuura and Senou 2006. Of those Group I species with a formula of 9/8, *E. melasma* Lachner and Karnella 1980 and *E. smaragdus* Jordan and Seale 1906 both have a single, prominent dark occipital spot that is lacking in *E. rubrisparsa*. *Eviota rubrisparsa* has a filamentous dorsal fin, whereas *E. disrupta* Karnel-

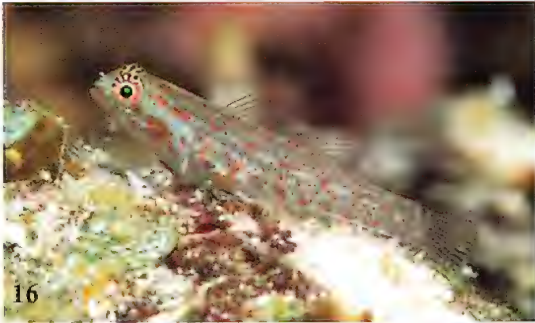
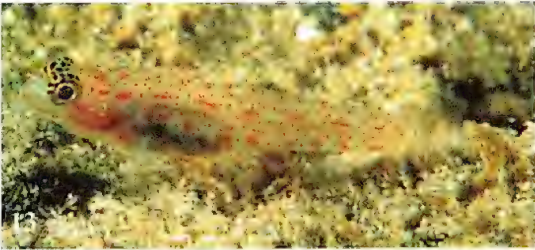


- FIGURE 1. *Eviota toshiyuki*, holotype, OMNH-P 35366, 18.0 mm SL female, Ogasawara Islands. Photograph by T. Suzuki.
- FIGURE 2. *Eviota toshiyuki*, paratype, BPBM 35204, 17.8 mm SL, Ogasawara Islands. Photograph by J.E. Randall.
- FIGURE 3. *Eviota epiphanes*, Hawaii, Oahu, estimated total length 17 mm. Photograph by J.E. Randall.
- FIGURE 4. *Eviota zonura*, Ataoru, Indonesia, estimated total length 17 mm. Photograph by J.E. Randall.
- FIGURE 5. *Eviota winterbottomi*, holotype, ROM 73100, 14.7 mm SL, Vietnam. Photograph by R. Winterbottom.
- FIGURE 6. *Eviota winterbottomi*, BPBM 38789, 15.1 mm SL, Indonesia, Komodo. Photograph by J.E. Randall.
- FIGURE 7. *Eviota shimadai*, holotype, NSMT-P 94898, 14.5 mm SL, male, Japan, Ryukyu Islands. Photograph by T. Suzuki.
- FIGURE 8. *Eviota shimadai*, paratype, ROM 84590, 10.5 mm SL, male, Palau. Photograph by R. Winterbottom.
- FIGURE 9. *Eviota shimadai*, paratype, OMNH-P 34244, 12.3 mm SL, female, Japan, Ryukyu Islands. Photograph by T. Suzuki.
- FIGURE 10. *Eviota shimadai*, paratype, BPBM 35322, 15.1 mm SL, female, Ogasawara Islands. Photograph by J.E. Randall.
- FIGURE 11. *Eviota rubrisparsa*, paratype, BPBM 39055, 12.3 mm SL, male, Papua New Guinea, New Britain, Lolobau Island. Photograph by J.E. Randall.
- FIGURE 12. *Eviota rubrisparsa*, Indonesia, Alor, estimated total length 20 mm. Photograph by J.E. Randall.



- FIGURE 13. *Eviota rubrisparsa*, Papua New Guinea, New Britain, Kimbe Bay, estimated total length 25mm. Photograph by J.E. Randall.
- FIGURE 14. *Eviota rubrisparsa*, Indonesia, Flores at Maumere, estimated total length 22 mm. Photograph by J.E. Randall.
- FIGURE 15. *Eviota rubrisparsa*, Papua New Guinea, D'Entrecasteaux Islands, estimated total length 18 mm. Photograph by J.E. Randall.
- FIGURE 16. *Eviota rubrisparsa*, Cenderawasih Bay, West Papua. Photograph by G.R. Allen.
- FIGURE 17. *Eviota guttata*, Red Sea, 18.9 mm SL, Fig. 5B from Herler and Hilgers (2005). Courtesy of J. Herler.
- FIGURE 18. *Eviota guttata*, Red Sea, 18.9 mm SL, Fig. 5A from Herler and Hilgers (2005). Courtesy of J. Herler.
- FIGURE 19. *Eviota guttata*, Red Sea. Courtesy of S. Bogorodsky.
- FIGURE 20. *Eviota guttata*, Red Sea. Photograph by J.E. Randall.
- FIGURE 21. *Eviota guttata*, Musandam, Oman. Photograph by J.E. Randall.
- FIGURE 22. *Eviota guttata*, Maldives. Photograph by J.E. Randall.





- FIGURE 23. *Eviota guttata*, Indonesia. Photograph by J.E. Randall.  
FIGURE 24. *Eviota guttata*, Bali. Photograph by J.E. Randall.  
FIGURE 25. *Eviota guttata*, New Britain. Photograph by J.E. Randall.  
FIGURE 26. *Eviota guttata*, Vietnam, ROM 73069, 17.7 mm, SL. Photograph by R. Winterbottom.  
FIGURE 27. *Eviota guttata*, Great Barrier Reef, Australia. Photograph by J.E. Randall.  
FIGURE 28. *Eviota guttata*, Ogasawara Islands. Photograph by J.E. Randall.  
FIGURE 29. *Eviota guttata*, Fiji. Photograph by J.E. Randall.  
FIGURE 30. *Eviota guttata*, American Samoa. Photograph by J.E. Randall.  
FIGURE 31. *Eviota albolineata*, Tahiti, 19 mm SL Photograph by J.E. Randall.  
FIGURE 32. *Eviota albolineata*, Moorea, ROM 60765, 19.6 mm SL. Photograph by R. Winterbottom.  
FIGURE 33. *Eviota albolineata*, Mangareva, 25 mm SL. Photograph by J.E. Randall.  
FIGURE 34. *Eviota albolineata*, Kiritimati. Photograph by J.E. Randall



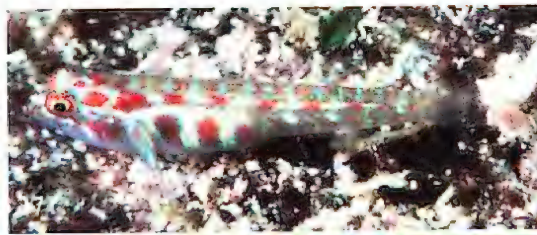
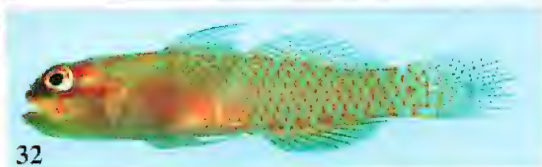
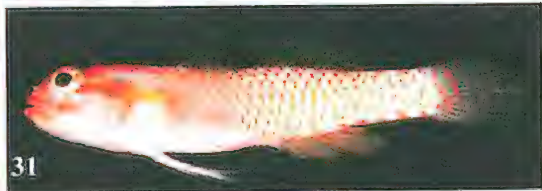
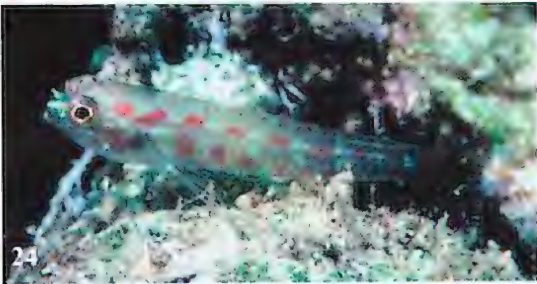


FIGURE 35. *Eviota guttata*, Fiji, CAS 219808, 16.2 mm SL. Arrows mark distinctive markings on chin and throat. Drawing by D.W. Greenfield.

FIGURE 36. *Eviota albolineata*, Moorea, ROM 60905, 18.6 mm SL. Pectoral-fin base pigmentation.

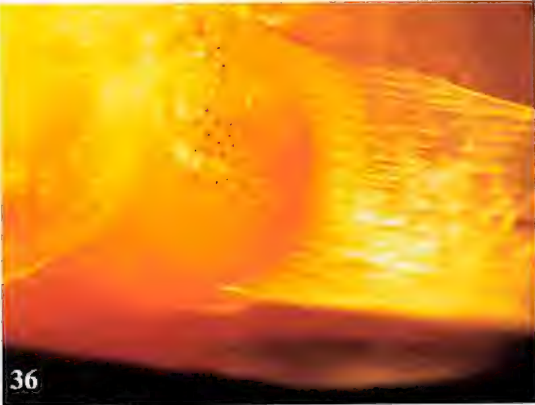
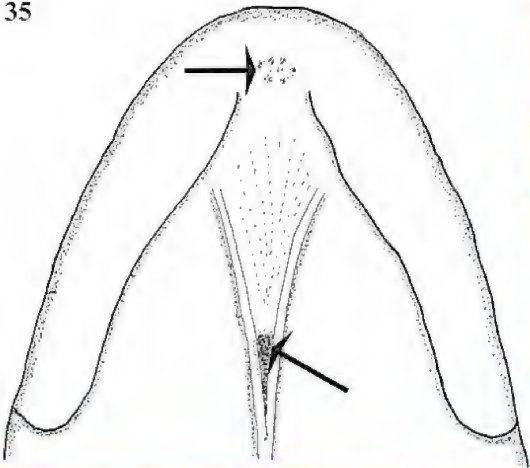
FIGURE 37A. *Eviota toshiyuki*, holotype, OMNH-P 35366, 18.0 mm SL female, Ogasawara Islands. Preserved.

FIGURE 37B. *Eviota winterbottomi*, holotype, ROM 73100, 14.7 mm SL. Vietnam. Preserved.

FIGURE 37C. *Eviota shimadai*, holotype, NSMT-P 94898, 14.5 mm SL, male, Japan, Ryukyu Islands. Preserved.

FIGURE 37D. *Eviota rubrisparsa*, holotype, WAM P. 29017.003, 19.5 mm SL, Christmas Island. Preserved.

35



36



37A



37B



37C



37D



la and Lachner 1981, *E. epiphanes* Jenkins 1903, *E. fasciola* Karnella and Lachner 1981, *E. irrassa* Karnella and Lachner 1981 and *E. readerae* Gill and Jewett 2004 are not filamentous. The remaining species do have a filamentous dorsal fin: *E. albolineata* Jewett and Lachner 1983 (but uncommon according to Jewett and Lachner 1983), *E. guttata* Lachner and Karnella 1978, *E. inutilis* Whitley 1943, *E. korechika*, Shibukawa and Suzuki 2005, and *E. natalis* Allen 2007. *Eviota inutilis* has a small dark spot lateral to the pelvic-fin base and a large diffuse occipital spot above the opercle that are lacking in *E. rubrisparsa*. *Eviota korechika* has two dark vertically aligned spots on the pectoral-fin base that are absent in *E. rubrisparsa*. *Eviota rubrisparsa* is illustrated as *E. albolineata* on page 215 in Allen et al. 2007.

### COMPARISON OF *EVIOTA GUTTATA* AND *E. ALBOLINEATA*

Early descriptions of species of the gobiid fish genus *Eviota* lacked information on the life color. Such was the case when Lachner and Karnella (1978) described *Eviota guttata* from the Red Sea and the Gulf of Oman. Jewett and Lachner (1983) then described *Eviota albolineata* without photographs of live or fresh specimens from type material collected in the Society Islands. They examined numerous nontype specimens from the Tuamotu Archipelago to Mozambique. They wrote, "This species is a complex of two color forms, one highly pigmented, represented in part by the type material from the Society Islands and Tuamotu Archipelago (eastern Oceania population) and a pallid form that is more widespread, occurring more to the west in Oceania, the Indo-Australian Archipelago, the Great Barrier Reef, and the Indian Ocean (western Oceania-Indian Ocean population)." (Jewett and Lachner 1983:785). They reported three notes on the fresh coloration from other authors (one as "solid brilliant green") (Jewett and Lachner 1983:787), but these are not diagnostic for the species.

Because Jewett and Lachner (1983) included nontype material from the western Pacific to the Indian Ocean in their description of *Eviota albolineata*, and because *E. guttata* was thought to occur only in the Red Sea and Oman, other authors have identified specimens matching their description from the western Pacific as *E. albolineata*. Sunobe and Shimada (1989) published what they believed to be the first record of *E. albolineata* from Japan with underwater and fresh specimen photographs in color. Hayashi and Shiratori (2003: 48) and Senou et al. (2004: 129) followed with additional live color photographs from Japan; however, Myers (1999:253, pl. 159, I and K) included both species in his book on the fishes of Micronesia (neither are *E. albolineata*).

Herler and Hilgers (2005) published excellent color photographs of both live and fresh specimens of *Eviota guttata* from the Red Sea (reproduced as our Figs. 17 and 18), Sergey Bogorodsky provided one of his underwater photographs from the Red Sea (Fig. 19), and we present new figures from the Red Sea (Fig. 20), Oman (Fig. 21) and the Maldives (Fig. 22). To show variation in color over geographic areas we include photographs of similar fish from Indonesia (Figs. 23 and 24), New Britain (Fig. 25), Vietnam (Fig. 26), Great Barrier Reef (Fig. 27), Ogasawara Islands (Fig. 28), Fiji (Fig. 29), and American Samoa (Fig. 30, easternmost record).

We provide here photographs of fresh material from the eastern populations of *E. albolineata* from Tahiti (Fig. 31), and Moorea (Fig. 32) in the Society Islands, Mangareva in the Tuamotu Archipelago (Fig. 33), and Kiritimati in the Line Islands (Fig. 34). A comparison with photographs from the Red Sea, Indian Ocean, and the western Pacific reveals distinct differences.

*Eviota albolineata* is presently known from the Society Islands, Tuamotus, and Line Islands. It is replaced in the more western part of the Pacific and into the Indian Ocean by *E. guttata*. In their description of *E. albolineata*, Jewett and Lachner (1983) discussed the difficulty they had in separating *E. albolineata* from *E. guttata*. They wrote, "Yet, we regard our interpretation of these



species as tentative..." (Jewett and Lachner 1983:787–788). Their hesitation is understandable, considering that they included specimens of *E. guttata* in their material of *E. albolineata*.

Species of *Eviota* have been separated in the literature by the following morphological characters: Cephalic sensory-pore patterns, dorsal/anal fin-ray formulas, presence or absence of a filamentous dorsal fin; number of pectoral-fin rays and their branching; relative development of fifth pelvic-fin ray; number of branches on fourth pelvic-fin ray and number of segments between branches; and structure of the genital papilla. These characters are used to place species into groups, but then one must often use color patterns to separate species within those groups, and old museum specimens may not reliably show those characters. *Eviota guttata* and *E. albolineata* are an example because *E. guttata* and *E. albolineata* do not differ in counts or measurements. There are, however, color differences in preserved material of these two species that support the differences seen in live and fresh specimens. *Eviota guttata* has a dark spot on the ventral side of the head on the isthmus, about in line with the posterior portion of the maxilla. In addition, there are a few scattered melanophores on the underside of the lower jaw near the tip (Fig. 35). The intensity of this dark pigmentation varies, from a few melanophores to a very dark area. These dark spots are absent in *E. albolineata*. *Eviota albolineata* has a scattering of melanophores obliquely across the pectoral-fin base that is concentrated in the center (Fig. 36). Although *E. guttata* may have a few scattered melanophores on the pectoral-fin base, they are not concentrated into a band. *Eviota albolineata* also has two distinct bands of melanophores extending posteriorly from the eye. The upper band is narrow, extending from the eye to above the pectoral-fin base. The lower band is broader and extends across the cheek onto the opercle. These bands correspond to the red bands extending back from the eye in fresh material.

Although these pigment patterns are obvious in preserved material that has been in collections for relatively few years, the dark pigment often fades in specimens that are much older. Many of the CAS specimens collected during the Vanderbilt expeditions (1954–1956) only have one or two melanophores remaining at the tip of the chin or gular area, or show no pigmentation at all; however, CAS 48479 from Saipan, collected in 1956, still retains strong gular pigmentation in all four specimens. Added to this problem is variation in the extent of pigmentation in different specimens. Within a single lot collected at the same time, some specimens will have strong pigmentation, others just a few melanophores. Obviously the live or fresh coloration of the two species is a much better character to separate them.

*Eviota rubriparsa* lacks the dark spots on the gular area present in *E. guttata*, and the pectoral-fin band that is present in *E. albolineata*. In addition, the live and fresh coloration of *E. rubriparsa* differs greatly from either species. Allen et al. (2007) illustrate both *E. rubriparsa* (as *E. albolineata*) and *E. natalis* (a species similar to *E. guttata* and *E. albolineata*), showing the great difference in live coloration between the two species.

## DISCUSSION

Since Lachner and Karnella (1978, 1980), Karnella and Lachner (1981), and Jewett and Lachner (1983) first recognized different cephalic sensory-pore patterns among *Eviota* species, these patterns have played an important role in the systematics of this genus. Descriptions of new species often compare those species with others included in the specific pore-pattern group (Group I, II, etc.). Although the monophyly of these groups has never been tested, there has been a tendency to treat these groups as natural. In this paper we have two examples of species that are very similar to other described species, but because of the loss of a single pore are placed in another pore-pattern group. *Eviota shimadai* looks very similar to *E. sigillata*, but it lacks the PITO and IT pores

and thus belongs to Group IV, whereas *E. sigillata* has the PITO pore and thus belongs to Group III. *Eviota toshiyuki* looks very similar to *E. zonura*, but it has a complete cephalic sensory-canal pore configuration (Group I), whereas *E. zonura* lacks the IT pore and thus belongs to Group II. A phylogenetic and ontogenetic study of representatives of the pore pattern groups should prove to be most informative regarding this issue.

**COMPARATIVE MATERIAL EXAMINED.**— *Eviota albolineata*: CAS 48471(4), paratypes, Tahiti; CAS 48469(6), Moorea [illustrated in Jewett and Lachner (1983)]; ROM 60765(2), Moorea; ROM 60905(23), Moorea; BPBM 9418(4), Tahiti; BPBM 11288(1), Moorea; CAS 48526(2), Kiribati. *Eviota epiphanes*: CAS-227277(278), Hawaii; CAS 43820(2), Kiribati. *Eviota guttata*: CAS 77357(7), Maldives; BPBM 33283(12), Saudi Arabia; WAM P. 28577.001 (6), Chagos Archipelago; CAS 219808(27), CAS 48524(3), American Samoa; CAS 48464(1), CAS 48468(1), Guam; CAS 48479(4), Saipan; CAS 48163(1), CAS 48465(1), Palau; CAS 48462(5), CAS 48463(15), CAS 48466(7), CAS 48475(10), Caroline Islands; CAS 219808(27), Fiji; WAM P. 27824.039(2), WAM P. 30619.008(9), WAM P. 30621.021(2), WAM P. 30630.019(1), WAM P. 30633.012(5), WAM P. 30635.009(21), WAM P. 30636(2), WAM P. 32984.022 (1), Papua New Guinea; WAM P. 30804.003(1), Indonesia; BPBM 35306(2), Ogasawara Islands. *Eviota sigillata*: CAS 47862(2), Pohnpei Island; CAS 47864(3), Palau; BPBM 37669(2), Indonesia; BPBM 37738(5), Palau. *Eviota zonura*: CAS 219811(23), Fiji.

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